

Application No. 10/717,578  
Amendment dated January 25, 2006  
Reply to Office Action of August 8, 2005

Docket No.: 3313-1060P

### REMARKS

Claims 1-4 are now present in this application.

The specification and claim 1 have been amended, and claims 5-7 have been cancelled without prejudice or disclaimer. Reconsideration of the application, as amended, is respectfully requested.

### Objection to the Claims

Claims 5-7 stand objected to under 37 CFR 1.75 as being a substantial duplicate of claims 1-3, respectively. Accordingly, claims 5-7 have been cancelled. Reconsideration and withdrawal of any objection to the claims are respectfully requested.

### Rejections under 35 USC 103

Claims 1-7 stand rejected under 35 USC 103 as being unpatentable over Japanese Patent 411071658 or Japanese Patent 358153752. These rejections are respectfully traversed.

Claims 1-7 stand rejected under 35 USC 103 as being unpatentable over Japanese Patent 358042750, or Ueda et al., U.S. Patent 5,951,789, or Sundstrom et al., U.S. Patent 6,485,679. These rejections are respectfully traversed.

It is noted that claim 1 would read as follows, if the measurements were expressed in terms of atomic weight:

Application No. 10/717,578  
 Amendment dated January 25, 2006  
 Reply to Office Action of August 8, 2005

Docket No.: 3313-1060P

1. A high strength multi-component alloy, expressed in terms of weight based on the total weight of the alloy comprising:

a % Fe,  $5 \leq a \leq 35$ ;

b % Co,  $5 \leq b \leq 35$ ;

c % Ni,  $5 \leq c \leq 35$ ;

d % Cr,  $5 \leq d \leq 35$ ;

e % Cu,  $5 \leq e \leq 35$ ; and

f % Al,  $(12.5) \leq f \leq 17.5$ ;

wherein  $a + b + c + d + e + f \leq 100$ .

It is respectfully submitted that the present application differs from the prior art utilized by the Examiner in a variety of ways, which are summarized in the charts below.

Pat. Number	Purpose & Result	Composition	Remark
JP411071658	To obtain a thin type compact magnetic marker showing large Barkhausen discontinuity by regulating the cross-sectional dimension and cross section of an Fe base amorphous metallic thin strip to specified values and regulating the number of The times of torsion in a state in which stress is not applied to a specified value.	The Fe base amorphous metal is an alloy contg. at least one kind among Fe, Co and Ni by $\geq 65$ atomic % and forms amorphous single phases. The compsn. of the Fe base amorphous metal is composed of, by atom, (a) $\leq 5\%$ <u>Ni</u> and <u>Fe</u> , <u>Co</u> and (b) Ni by 65 to 90% in total and (c) preferably contains B, P, C, Si, <u>Al</u> , Ga, Zr, Nb and Ta by 10 to 35% in total.	The JP '658 document lacks the recitation of Cr and Cu, as can be found in the present application

Application No. 10/717,578  
 Amendment dated January 25, 2006  
 Reply to Office Action of August 8, 2005

Docket No.: 3313-1060P

Pat. Number	Purpose & Result	Composition	Remark
JP358153752	To obtain an Ni-Cr alloy having <u>excellent cold-workability</u> and <u>high electric resistance</u> , by adding Al or Si to an Ni-Cr alloy to make specified composition.	The alloy is an Ni-Cr alloy comprising, by <u>atomic %</u> , (a) 10~ 50% <u>Cr</u> , (b) 5~25% <u>Al</u> or Si, optionally (c) up to 40% one or more among <u>Fe</u> , <u>Co</u> , Nb, Ta, V, Mo, Mn, <u>Cu</u> , Ge, Ga, Ti, Zr, Hf, Ca, Ce, Y and Th ( <u>with the proviso of</u> $\geq 40\%$ Fe, $\geq 3\%$ the elements from Co to Ga and $\geq 1\%$ the elements from Ti to Y), and (d) the balance substantially <u>Ni</u> with the proviso that the total of the components (a)~(d) is at 100%.	In the JP '752 application, Co is restrained to lower then 3%.

Application No. 10/717,578  
 Amendment dated January 25, 2006  
 Reply to Office Action of August 8, 2005

Docket No.: 3313-1060P

Pat. Number	Purpose & Result	Composition	Remark
JP358042750	To obtain the titled alloy easy to work and having a high gauge rate, a slight change in the gauge rate to the composition and superior other various characteristics by adding Ni to an Fe-Cr-Co alloy as a material for a strain gauge.	An alloy consisting of, by weight, (a) 3~35% <u>Cr</u> , (b) 17~70% <u>Co</u> , (c) 0.01~60% <u>Ni</u> , (d) 0.1~25% in total of one ore more among $\leq$ 0% <u>Cu</u> , $\leq$ % W, $\leq$ 0% Mo, $\leq$ % Nb, $\leq$ 0% Ta, $\leq$ 0% V, $\leq$ 0% Pd, $\leq$ % Sn, $\leq$ % Sb, $\leq$ 0% Mn, $\leq$ % <u>Al</u> , $\leq$ % Si, $\leq$ % Ti, $\leq$ % Ge and $\leq$ % Zr, (e) a small amount of impurities and (f) the balance <u>Fe</u> .	In the JP '750 application, Al is restrained lower then 5% and Cu is restrained lower 10%.

Application No. 10/717,578  
 Amendment dated January 25, 2006  
 Reply to Office Action of August 8, 2005

Docket No.: 3313-1060P

Pat. Number	Purpose & Result	Composition	Remark
US5951789	For use in exhaust valves low in price and excellent in the cold workability and possible to be formed into valve shapes through the cold or warm working.	<p>Consists by weight % of</p> <p>(a) 0.01~0.1% C</p> <p>(b) <math>\leq 2\%</math> Si</p> <p>(c) <math>\leq 2\%</math> Mn</p> <p>(d) 12~25% <u>Cr</u></p> <p>(e) 25~45% <u>Ni</u></p> <p>(f) 0.1~5% <u>Cu</u></p> <p>(g) optionally at least one element selected from</p> <p><math>\leq 3\%</math> W</p> <p><math>\leq 3\%</math> Mo</p> <p><math>\leq 1\%</math> V (with <math>(1/2W + Mo + V) \leq 3\%</math>)</p> <p><math>\leq 5\%</math> <u>Co</u> (with 25~45% Ni+Co and 0.001~0.01% Ca + Mg)</p> <p>(h) one or both of</p> <p><math>\leq 0.01\%</math> B</p> <p>0.001~0.1% Zr</p> <p>(i) the balance of <u>Fe</u> and</p> <p>(j) incidental impurities.</p>	<p>The US '789 patent does not recite Al, as can be found in the present application.</p> <p>This patent also restrains Cu at the level of 0.1~5%, and Co at a level lower than 5%.</p>

Application No. 10/717,578  
 Amendment dated January 25, 2006  
 Reply to Office Action of August 8, 2005

Docket No.: 3313-1060P

Pat. Number	Purpose & Result	Composition	Remark
US6485679	A heat resistant austenitic stainless steel with high strength at elevated temperatures, good steam oxidation resistance, good fire side corrosion resistance, and a sufficient structural stability, suitable for use in boilers operating at high temperature.	Composes by weight of (a) 0.04~0.10% C, (b) $\leq 0.4\%$ Si, (c) $\leq 0.6\%$ Mn, (d) 20~27% <u>Cr</u> , (e) 22.5~32% <u>Ni</u> , (f) $\leq 0.5\%$ Mo, (g) 0.20~0.60% Nb, (h) 0.4~4.0% W, (i) 0.1~0.3% N, (j) 0.02~0.08% B, (k) $\leq 0.05\%$ <u>Al</u> , (l) $\leq 0.01$ at least one of Mg and Ca, (m) balance <u>Fe</u> , and (n) inevitable impurities.	The US '679 patent does not recite Co and Cu, as can be found in the present application. This patent also restrains Al to a level lower than 0.05%.

Unlike the prior art utilized by the Examiner, the present application produces a multi-component alloy with good high-temperature mechanical properties, and provides a high-strength alloy that contains multi-principal multiple elements and is formulated under a design concept different from the prior art. It is composed of a high strength multi-component alloy, expressed in terms of atoms based on the total number of atoms of the alloy, comprising:

a % Fe,  $5 \leq a \leq 55$ ;

b% Co,  $5 \leq b \leq 5$ ;

c% Ni,  $5 \leq c \leq 5$ ;

d% Cr,  $5 \leq d \leq 5$ ;

e% Cu,  $5 \leq e \leq 5$ ; and

f% Al,  $5 \leq f \leq 5$ ;

Application No. 10/717,578  
 Amendment dated January 25, 2006  
 Reply to Office Action of August 8, 2005

Docket No.: 3313-1060P

wherein  $a + b + c + d + e + f \leq 100$ .

The prior art utilized by the Examiner fails to teach or suggest all of the features found in independent claim 1 of the present application.

To further demonstrate the differences between the prior art utilized by the Examiner and the present application, the following is a table comparing the compositions of independent claim 1 and the prior art utilized by the Examiner.

	Present application		JP'658	JP'752	JP'750	US'789	US'679
In terms of	Atom	Weight	Atom	Atom	Weight	Weight	Weight
Fe	5-35	5-35	<35	16-40	Balance	Balance	Balance
Co	5-35	5-35	<35	<40	17-70	<5	0
Ni	5-35	5-35	<35	Balance	0.01-60	25-45	22.5-32
Cr	5-35	5-35	0	10-50	3-35	12-25	20-27
Cu	5-35	5-35	0	<40	<10	0.1-5	0
Al	25-35	12.5-17.5	10-35	5-25	<5	0	<0.05

It is again respectfully submitted that the JP '658, US '679 and US '789 patents neither teach nor suggest all of compositions found in the present application. Although the JP '752 and JP '750 applications disclose all of the compositions found in the present application, the atomic percentage of Al of this application ranges from 25 to 32, which differs from the atomic percentage of Al of JP '752, which ranges from 5 to 25. In addition, the weight percentage of Al of the present application ranges from 12.5 to 17.5, which differs from the weight percentage of Al of JP '750, which is less than 5. Based on these differences, the present application discloses a multi-component alloy with good high-temperature mechanical properties.

Application No. 10/717,578  
Amendment dated January 25, 2006  
Reply to Office Action of August 8, 2005

Docket No.: 3313-1060P

It is respectfully submitted that the prior art utilized by the Examiner fails to teach or suggest the composition of independent claim 1, as well as its dependent claims. Accordingly, reconsideration and withdrawal of the 35 USC 103 rejections are respectfully requested.

Conclusion

Favorable reconsideration and an early Notice of Allowance are earnestly solicited.

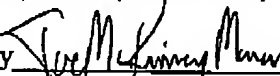
In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants respectfully petition for a three (3) month extension of time for filing a response in connection with the present application and the required fee of \$1,020.00 is attached herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By 

Joe McKinney Muncy

Registration No.: 52,334

BIRCH, STEWART, KOLASCH & BIRCH, LLP

8110 Gatehouse Road

Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant